CLAIMS

1. A method comprising:

operating a turbocharger including a variable geometry turbine having an inlet passage to the turbine with a fluid flow area, the fluid flow area having a normal size for an internal combustion engine operating in a normal operating range;

reducing the size of the fluid flow area from the normal size to a reduced size for exhaust gas heating; and

bypassing a portion of the exhaust gas entering the inlet passage around the guide vanes of the variable geometry turbine.

2. The method of claim 1, wherein in said bypassing the portion of the exhaust gas flows internally within the turbocharger.

3. The method of claim 1, wherein said reducing includes moving a portion of the variable geometry turbine.

4. The method of claim 3, wherein said moving includes axial movement of a nozzle ring.

5. The method of claim 3, wherein said moving includes rotation of a plurality of guide vanes.

6. The method of claim 1, wherein the fluid flow area has a maximum flow area, and wherein the flow area corresponding to said

reduced size is within a range of about zero percent to about twenty-five percent of the maximum flow area.

7. The method of claim 1, wherein the portion of the exhaust gas from said bypassing renters the rest of the exhaust gas flowing to the turbine wheel from the inlet passage at a steep angle or substantially perpendicular thereto.

8. The method of claim 1, which further includes determining the temperature of the exhaust gas passing from an outlet of the variable geometry turbine, and further includes operatively controlling said reducing based upon whether the temperature of the exhaust gas passing from the outlet of the variable geometry turbine satisfies a threshold temperature condition.

9. The method of claim 1, wherein said reducing exposes a bypass fluid flow path to the exhaust gas within the inlet passage, the bypass fluid flow path is normally blocked when the fluid flow area is of the normal size.

10. The method of claim 1, which further includes passing the exhaust gas from the variable geometry turbine to an after-treatment system; and

which further includes determining the temperature of the exhaust gas in the after-treatment system, and operatively controlling said

reducing based upon whether the temperature of the exhaust gas in the after-treatment system satisfies a threshold temperature condition.

11. The method of claim 10, wherein the threshold temperature condition is within a range of about 500° F to about 700° F.

12. A method comprising:

operating a turbocharger including a moving nozzle vane variable geometry turbine, the turbine including an inlet passage having an exhaust gas flow area adapted for the flow of an exhaust gas, the exhaust gas flow area having a first size configured for an internal combustion engine operating in a normal operating range;

determining a first temperature of the exiting exhaust gas of the variable geometry turbocharger;

moving a nozzle ring within the variable geometry turbine to decrease the exhaust gas flow area from the first size to a reduced size if the first temperature does not satisfy a threshold temperature condition; and

bypassing a portion of the exhaust gas entering the inlet passage around a plurality of vanes of the variable geometry turbine.

13. The method of claim 12, wherein in said moving the nozzle ring moves in an axial direction; and wherein in said bypassing the portion of the exhaust gas flows within the turbocharger.

14. The method of claim 12, wherein the portion of the exhaust gas from said bypassing renters the rest of the exhaust gas flowing to the turbine wheel from the inlet passage at a steep angle.

15. The method of claim 12, wherein the portion of the exhaust gas from said bypassing renters the rest of the exhaust gas flowing to the turbine wheel from the inlet passage in a direction substantially perpendicular thereto.

16. The method of claim 12, wherein said moving opens at least one bypass fluid flow path in fluid communication with the exhaust gas within the inlet passage, and wherein the bypass fluid flow path is normally blocked when the fluid flow area is of the normal size.

17. The method of claim 16, wherein in said bypassing the portion of the exhaust gas flows through the at least one bypass fluid flow path.

18. The method of claim 12, which further includes passing the exhaust gas from the variable geometry turbine to an after-treatment system;

wherein in said determining the temperature of the exhaust gas in the after-treatment system is determined, and which further includes operatively controlling said moving based upon whether the temperature of the exhaust gas in the after-treatment system satisfies a threshold temperature condition.

19. The method of claim 18, wherein the threshold temperature condition is within a range of about 500° F to about 700° F.

20. The method of claim 12, wherein the exhaust gas flow area has a maximum width, and wherein the width corresponding to said reduced size is within a range of about zero percent to about twenty-five percent of the maximum width.

21. A method comprising:

operating a turbocharger including a swing vane variable geometry turbine having a plurality of guide vanes, the turbine including an inlet passage having an exhaust gas flow area adapted for the flow of exhaust gas, the exhaust gas flow area having a first area for an internal combustion engine operating in a normal operating range;

determining a first temperature of the exhaust gas proximate the outlet of the variable geometry turbocharger;

swinging the plurality of guide vanes within the variable geometry turbine to reduce the size of the exhaust gas flow area from the first area to a reduced area if the first temperature does not satisfy a threshold temperature; and

flowing a portion of the exhaust gas entering the inlet passage around the plurality of guide vanes of the variable geometry turbine.

22. The method of claim 21, wherein said flowing includes bypassing the portion of the exhaust gas around the plurality of guide vanes.

23. The method of claim 21, wherein in said swinging the radial position of at least a portion of each of the plurality of guide vanes is changed.

24. The method of claim 21, wherein said flowing includes bypassing the portion of the exhaust gas around the plurality of guide vanes; and

wherein the portion of the exhaust gas from said flowing renters the rest of the exhaust gas flowing to the turbine wheel from the inlet passage at a steep angle.

25. The method of claim 21, wherein said flowing includes bypassing the portion of the exhaust gas around the plurality of guide vanes; and

wherein the portion of the exhaust gas from said bypassing renters the rest of the exhaust gas flowing to the turbine wheel from the inlet passage in a direction substantially perpendicular thereto.

26. The method of claim 21, wherein said swinging exposes the exhaust gas within the inlet passage to at least one fluid flow bypass path, the fluid flow bypass path is normally not substantially in fluid

flow communication with the exhaust gas when the exhaust gas flow area is defined by the first area.

27. The method of claim 26, wherein in said flowing the portion of the exhaust gas flows through the at least one fluid flow bypass path.

28. The method of claim 21, which further includes passing the exhaust gas from the variable geometry turbine to an after-treatment system; and

wherein in said determining the temperature of the exhaust gas in the after-treatment system is determined, and which further includes operatively controlling said swinging based upon whether the temperature of the exhaust gas in the after-treatment system satisfies a threshold temperature condition.